REMARKS/ARGUMENTS

This Amendment is filed in response to the Office Action dated June 22, 2010. In the Office Action, Claim 74 has been rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claims 58-61 and 73 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 7,248,559 to Ma et al. ("*Ma*"). Claims 63, 64, 69, and 70 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Ma* in view of WO 02/078280 to Schafer et al. ("*Schafer*"). Claims 71 and 72 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Ma* and *Schafer* in view of WO 93/096622 to Jasper et al. ("*Jasper*"). Claim 74 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Ma* in view of U.S. Patent 5,852,850 to Langberg et al. ("*Langberg*"). Claims 62 and 65-68 have been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. The listed rejections are addressed below. For the Examiner's reference, Applicant has previously canceled Claims 1-57 and has amended Claim 74. Accordingly, Claims 58-74 remain pending in the application for the Examiner's consideration.

Claim Rejection under 35 U.S.C. § 101

On Page 2, the Office Action has indicated that Claim 74 is rejected because the claimed invention is directed to non-statutory subject matter. Specifically, the Office Action has stated that Claim 74 recites "a computer readable medium" and that a computer readable medium may be broadly interpreted as a "signal" per se, which is directed to non-statutory subject matter. Without agreeing to the premise that "a computer readable medium" is a "signal" per se, Applicant has amended Claim 74 to recite "a non-transitory computer readable medium." Therefore, Applicant respectfully requests the Examiner to withdraw the current § 101 rejection of this claim.

Claim Rejection under 35 U.S.C. § 102

As mentioned, Claims 58-61, and 73 have been rejected as being anticipated by *Ma*. The rejection of each claim is addressed below.

Independent Claim 58

Applicant respectfully submits that *Ma* fails to teach or suggest each and every feature of independent Claim 58. For instance, Claim 58 recites the steps of: (1) convoluting real data in each real data block with at least some of the control data in the control data blocks, (2) modulating or transforming the convoluted real data in the real data blocks with one or more sub-carrier signals, and (3) modulating or transforming data in the control data block with every sub-carrier that is used to modulate the real data. Thus, as recited in these steps, the real data contained within the real data blocks is convoluted with control data in the control blocks. On Page 3, the Office Action has indicated that the Orthogonal Frequency Division Multiplexing (OFDM) transmitter shown in Figure 2 of *Ma* discloses these steps. Applicant respectfully disagrees.

In general, *Ma* relates to the best positioning or pattern of scattered OFDM pilots in MIMO (Multiple Input Multiple Output) OFDM frame transmissions. *Ma* describes a diamond pilot insertion pattern that is the preferred deployment of pilots. *See* Abstract. A standard and well known encoding technique is used to generate a pilot block from two pilots symbols called Space Time Block Coding (STBC) based on an Almouti type algorithm for MIMO systems. *See* Col. 7, line 60 to Col. 8, line 9. That is, the pilot block is generated from two pilots P1 and P2 by normally accepted methods, such as BPSK or other methods for example. *Id*.

In Figure 2 of *Ma*, these defined pilots are encoded for transmission by the STBC technique over two frames simultaneously using two different antennas, namely Antenna 1 and Antenna 2. The transmitted sequences are:

Frame 1 Antenna 1 uses P1

Frame 1 Antenna 2 uses -P2* (= -1 times the complex conjugate of P2)

Frame 2 Antenna 1 uses P2

Frame 2 Antenna 2 uses P1* (= the complex conjugate of P2)

The decoding is then performed using standard STBC decoding.

The Office Action has indicated that the Pilot Inserter (24) in Figure 2 of *Ma* as convoluting phase angles with data. However, Applicant respectfully points out the Pilot STBC function (23) of Figure 2 generates the pilot, made from P1, P2, -P2* and P3, and this pilot is directly inserted into the transmitted frames by the Pilot Inserter (24). *See* Col. 7, lines 60-67. Therefore, there is no phase convolution of the pilots with any of the phase information of the data being transmitted on any of the subcarriers prior to insertion of the pilots into the frames in *Ma*.

The Office Action has stated, with respect to *Ma*, that " ... *pilot is inserted into data, data and pilots are added to each other which is construed as convolution*" However, this is incorrect. As shown above, the pilots are simply inserted into the frames. The term "insert" is defined as "[t]o put or set into, between, or among." *See* http://www.thefreedictionary.com/insert. Thus, there is no form of convolution or any mathematical mixing of the pilot information with data information taking place in *Ma* prior to inserting the pilots. Although the pilot blocks described in *Ma* are inserted with data blocks, the data contained within the pilots is not convoluted with any of the data being transmitted. Hence, *Ma* fails to teach or suggest convoluting real data in each real data block with at least some of the control data in the control data blocks, as recited in Claim 58.

For at least this reason, Applicant respectfully submits that *Ma* fails to teach or suggest at least these features recited in independent Claim 58. Accordingly, Applicant respectfully requests the Examiner to withdraw the current rejection of Claim 58 under § 102(e).

Dependent Claims 59-61 and 73

Claims 59-61 and 73 depend from independent Claim 58. The patentability of independent Claim 58 has been argued as set forth above and thus Applicant will not take this opportunity to argue the merits of the rejection with regard to these dependent claims. However, Applicant does not concede that these dependent claims are not independently patentable and reserve the right to argue the patentability of the dependent claims at a later date if necessary.

Claim Rejection under 35 U.S.C. § 103

As mentioned, Claims 63, 64, 69, and 70 have been rejected as being unpatentable over *Ma* in view of *Schafer*. Claims 71 and 72 has been rejected as being unpatentable over *Ma* and *Schafer* in view of *Jasper*. Claim 74 has been rejected as being unpatentable over *Ma* in view of *Langberg*. The rejection of each claim is addressed below.

Dependent Claims 63, 64, 69, 70-72, and 74

Claims 63, 64, 69, 70-72, and 74 depend from independent Claim 58. The patentability of independent Claim 58 has been argued as set forth above and thus Applicant will not take this opportunity to argue the merits of the rejection with regard to these dependent claims. However, Applicant does not concede that these dependent claims are not independently patentable and reserve the right to argue the patentability of the dependent claims at a later date if necessary.

Allowable Subject Matter

Claims 62 and 65-68 have been objected to as being dependent upon a rejected base claim. However, these claims have been indicated as allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Based at least on the reasons set forth above with respect to the patentability of Claim 58, Applicant respectfully submits that Claims 62 and 65-68 are allowable in their current form because these claims depend from an allowable base claim. Accordingly, Applicant respectfully requests the Examiner to withdraw the current objection of these claims.

<u>Conclusion</u>

The foregoing is submitted as a full and complete response to the Office Action dated June 22, 2010. The foregoing amendments and remarks are believed to have placed the present application in condition for allowance, and such action is respectfully requested. The Examiner is encouraged to contact Applicant's undersigned attorney at (404) 881-7640 or e-mail at chris.haggerty@alston.com to resolve any remaining issues in order to expedite examination of the present application.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

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ELECTRONICALLY FILED USING THE EFS-WEB ELECTRONIC FILING SYSTEM OF THE UNITED STATES PATENT & TRADEMARK OFFICE ON October 20, 2010.

LEGAL02/31988546v1